



CXDI Image Processing Software

MLT (F)

User's Manual

Before using the instrument, be sure to read this manual thoroughly.
Also, read the manuals of other instruments in this system.
Keep the manual where it is easily accessible.

Please Note

1. In no event will Canon be liable for direct or indirect consequential damage arising out of the use of this product. Canon will not be liable for loss of image data due to any reason.
2. Please have this product installed by Canon representative or distributor.
3. Canon reserves the right to change the specifications of the product without prior notice.

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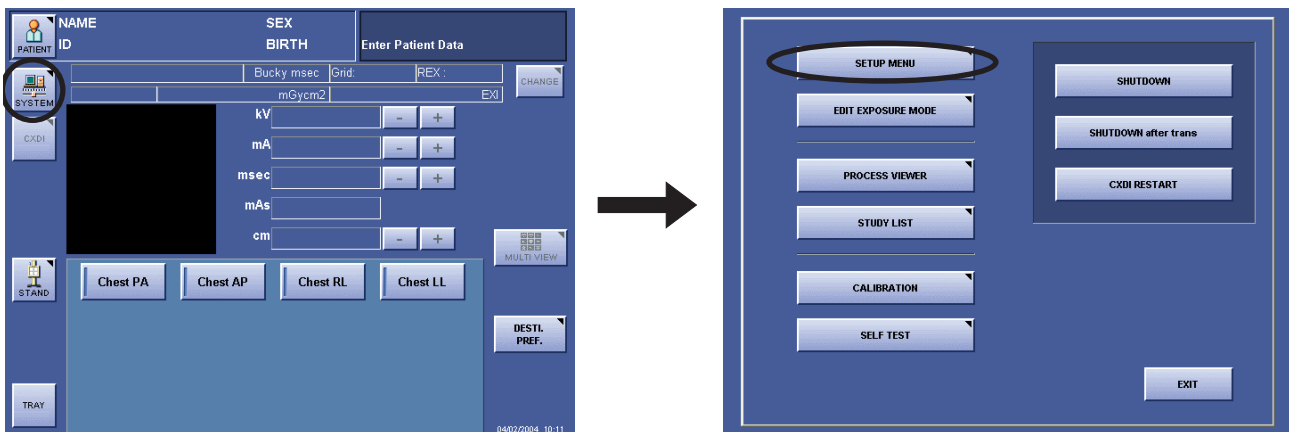
Notation Conventions

Notation 1

In this manual, the name of button is enclosed with a pair of brackets [], and the buttons that are selected in succession are connected with > to indicate the order.

Example: On the Exposure screen, touch the followings:
[SYSTEM] > [SETUP MENU]

Operation: Touch the SYSTEM button on the first screen, and then touch the SETUP MENU button on the second screen.



Touch the SYSTEM button (left), and then touch the SETUP MENU button (right)

Notation 2

If any detailed explanation for the operation or setting is available on other page in this manual, the page to refer is indicated with (→ page number).

Example: For details of the EFFECT parameter, refer to the step 2 in 2.2 Setting DWT ENHANCE. Tab (→ P.7)

Content: On page 7, detailed description of the EFFECT feature is provided.

Notation 3

When description of the procedure or setting continues from an odd-numbered page (right page) to the subsequent even-numbered page (left page), a small note, [Continued on the following page »] appears at the bottom-right of the odd-numbered page to draw your attention.

1. Overview

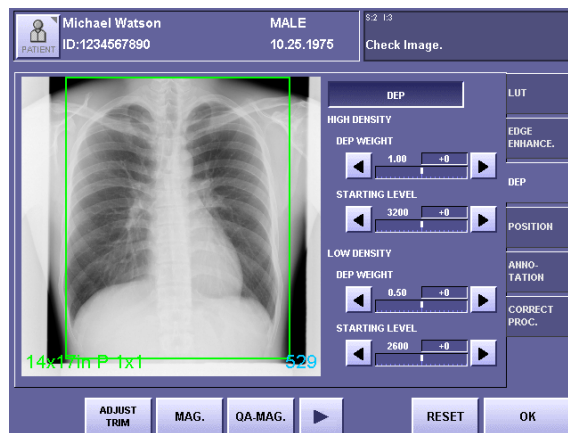
1.1 About MLT (F)

NOTE: MLT (F) is supported by CXDI System Software Version 4.3 or later.

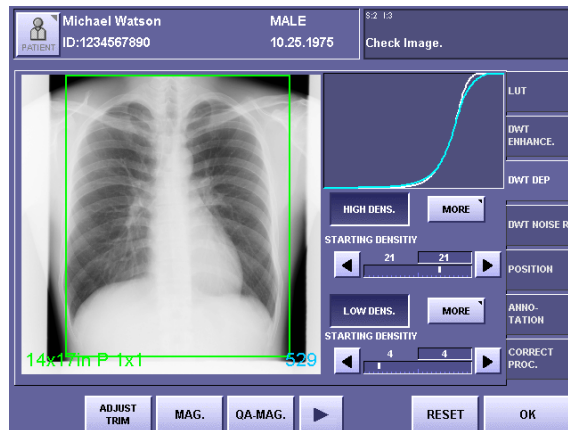
The CXDI Image Processing Software MLT (F) (called “MLT (F)” in this manual) is designed to extend the image processing functions provided with the CXDI series of Canon digital radiography system (called “CXDI” in this manual).

By installing MLT (F) on the Control PC, the advanced image processing features of MLT (F) are brought into full scope both in the Edit Exposure Mode and QA Mode.

The following examples show the QA Mode screens of CXDI System Software version 6.3.



Standard QA Mode Screen (DEP Tab)



QA Mode Screen Extended by MLT (F) (DWT DEP Tab)

1.2 Available Functions of MLT (F)

This manual describes the operating procedures of the following three image processing functions that are available with MLT (F). For details and information on other image processing functions, please refer to Operation Manual and Setup Guide.

DWT*1 Edge Enhancement (→ P.7)

The DWT ENHANCE. tab provides the function to accentuate edge details of the exposure image by specifying the three parameters; the degree of enhancement (EFFECT), type of enhancement (FREQUENCY BASE), and type of density dependent of the image (DENSITY BASE).

DWT DEP*2 (→ P.10)

The DWT DEP tab provides the function to compress the dynamic range of the exposure image by specifying the six parameters; the density to start compression (STARTING DENSITY), compression ratio (DEP WEIGHT), and intensity of compression (DEP EFFECT) for both the High-Density Field (HIGH-DENS.) and Low-Density Field (LOW-DENS.).

The imaging area on film or monitor is widened by decreasing the pixel value range in the second region of interest, without changing the minute structures in the first region of interest.

DWT Noise Reduction (→ P.13)

The DWT NOISE R. tab provides the function to reduce the noise components of the exposure image, and improve its granularity by specifying the two parameters; the degree of enhancement (EFFECT) and upper limit of density (PROCESSING UPPER LIMIT).

NOTE: The effects resulting from changes to the parameters may be difficult to check in the exposure image of the QA mode screen.
In these cases, check by touching [MAG.] or [QA-MAG.] to display the enlarged screen.



Display of the Tabs

At the time of installation, the service person can specify the fixed parameters, and set MLT (F) not to display the tabs for the individual settings of the DWT Edge Enhancement, DWT DEP and DWT Noise Reduction.

- *1 This is an abbreviation for Discrete Wavelet Transform. This method of image processing is also called Multi-Frequency Processing.
- *2 This is an abbreviation for Display Enhancement Processing. This method of image processing is also called Dynamic Range Compression Processing.

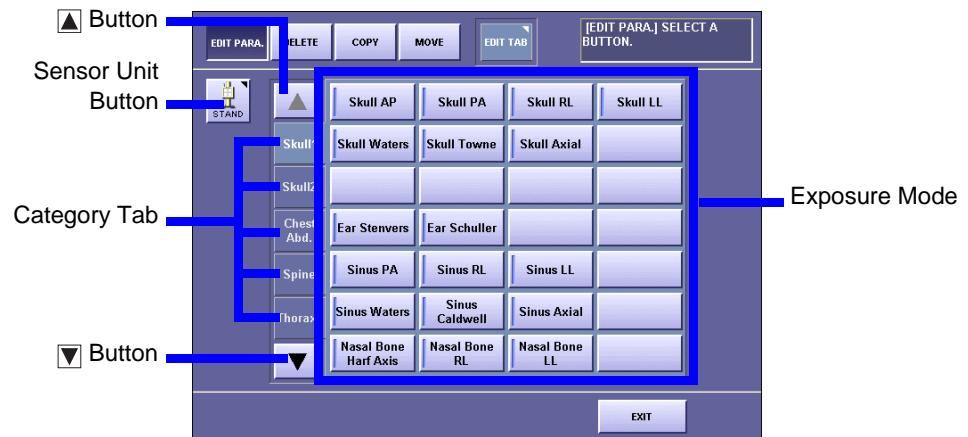
2. Edit Exposure Mode Settings

The examples used in this chapter are the screens of CXDI System Software version 6.3.

2.1 Procedures to Edit Exposure Mode

1 Display the Edit Exposure Mode screen

On the Exposure screen, touch the followings:
[SYSTEM] > [EDIT EXPOSURE MODE].



Edit Exposure Mode Screen

2 Select the Sensor Unit

If two or more sensor units are being used in the system, touch the **Sensor Unit** button, then select the Sensor Unit.

3 Select the Category tab

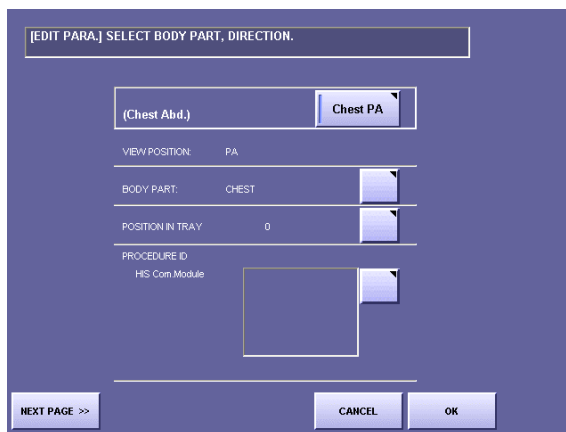
If eight or more categories are registered in the system, touch the ▲ or ▼ button to display the Category tabs that are not currently visible.

Continued on the following page >>

4 Select the Exposure Mode

Make sure that [EDIT PARA.] at the top-left is highlighted, and select the desired Exposure Mode.

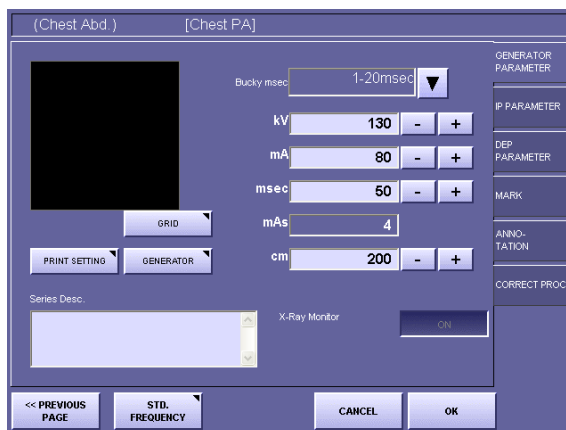
The EDIT PARA. screen appears.



EDIT PARA. Screen (first page)

5 Display the next page

Touch [NEXT PAGE].



EDIT PARA. Screen (second page)

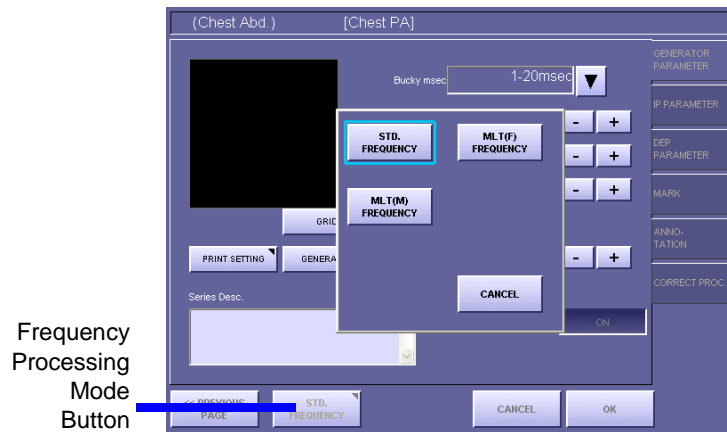


Availability of Frequency Processing Mode

If your CXDI System Software is the version 5.0 or before, there is no need to select the frequency processing mode as described in the next step (step 6). Skip the step 6 and proceed to the step 7.

6 Select MLT (F) FREQUENCY

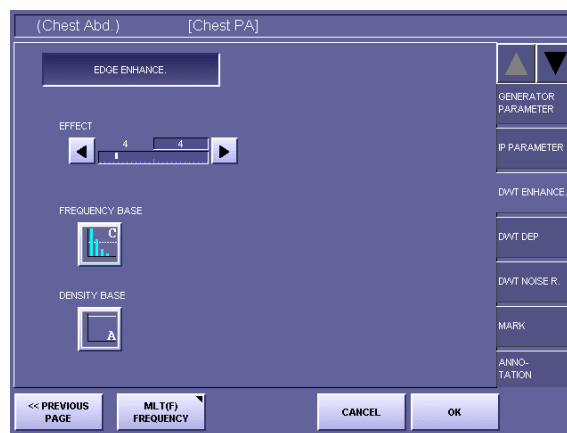
If MLT (F) FREQUENCY is not currently selected (in this case, the DWT ENHANCE., DWT DEP, and DWT NOISE R. tabs are not displayed), touch the Frequency Processing Mode button to open the window, then touch [MLT (F) FREQUENCY].



Frequency Processing Mode Window

7 Select the tab

Touch the desired tab from among three tabs: DWT ENHANCE., DWT DEP, DWT NOISE R.



DWT ENHANCE. Screen

8 Set the parameters

Set the parameters provided with the selected tab, referring to the corresponding descriptions; 2.2 Setting DWT ENHANCE. Tab (→ P.7), 2.3 Setting DWT DEP Tab (→ P.10), 2.4 Setting DWT NOISE R. Tab (→ P.13).

Continued on the following page >>

9 Save the parameters

Touch [OK]. The window displaying the following message appears:
Save the changed parameter.
Then, touch [OK].



When Password is required

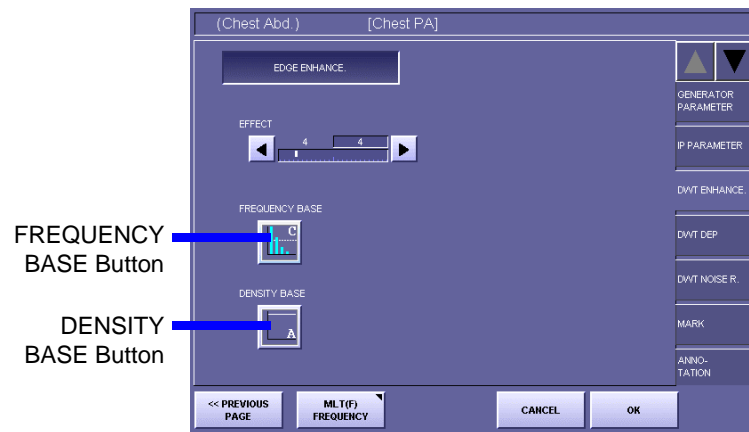
If the password is specified, a different message is displayed in the window as follows:
Administrator's authority is needed. Enter system password.

In this case, touch anywhere within the frame to display On-Screen-Keyboard, and type your password, then touch [OK].

2.2 Setting DWT ENHANCE. Tab

1 Set the DWT Edge Enhancement effective

Touch [EDGE ENHANCE.] to display the parameters. The appearance of the button switches over between the highlight (in white outline characters against a colored background) and normal display each time you touch the button. The parameters are available when the button is highlighted.



DWT ENHANCE. Screen with Parameters

2 Set the EFFECT parameter

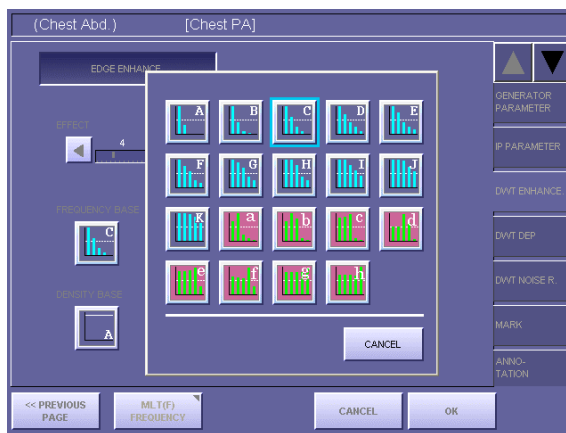
Touch the ◀ or ▶ button, and set the value within the range between 1 to 20. The value on the left is the setting saved previously, and the value on the right is the current setting. The value indicates the degree of edge enhancement. Select a larger value for higher degree of enhancement, and select a smaller value for lower degree of enhancement.

NOTE: If the EFFECT parameter is set to an excessive value, artifacts may occur in the image, or the effective data of the exposure image may be damaged. Check the output of exposure image, and if the results of enhancement appear to be too strong, either set the parameter to a smaller value, or set the DWT Edge Enhancement not effective.

Continued on the following page >>

3 Display the FREQUENCY BASE window

Touch the FREQUENCY BASE button to open the window.



FREQUENCY BASE Window

The types of Frequency Bases are classified into two kinds, and are indicated with the buttons in different colors respectively as follows:

Display of Button	Remarks
Blue Bar Graph	Enhances the signals smoothly ranging from the low frequency area to the high frequency area. The results of enhancement appear natural with smooth frequent response characteristics.
Green Bar Graph	Enhances the structures in the specific frequency band stronger than the structure in other frequency bands.

The bar graph in the each button shows the range of frequencies that enhancement applies to.

To enhance the mass structure, such as soft tissues, select the Frequency Base that applies enhancement to the lower frequency. The range increases by including the lower frequency in ascending order from A or a. To enhance the minute structure, such as bone tissues, select the Frequency Base that limits enhancement to the lower frequency and covers only the higher frequency. The range decreases by excluding the lower frequency in descending order to A or a.

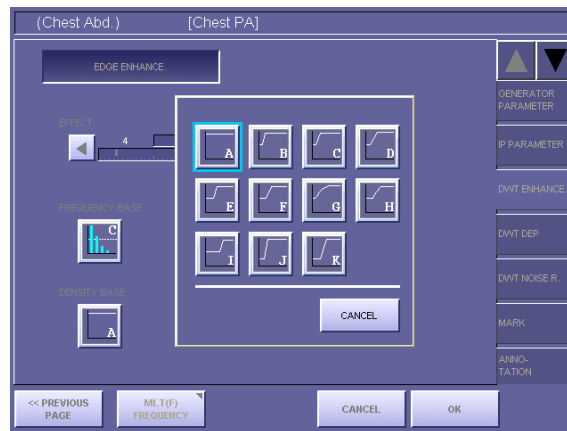
4 Set the FREQUENCY BASE parameter

Touch the desired Frequency Base button.

The parameter is set for the Frequency Base selected, and the FREQUENCY BASE window is closed.

5 Display the DENSITY BASE window

Touch the DENSITY BASE button to open the window.



DENSITY BASE Window

If granularity is too coarse on the Low-Density Field as the result of the enhancement, the quality can be improved by selecting the Density Base that applies weaker density enhancement to the area where the degradation of quality is obvious.

6 Set the DENSITY BASE parameter

Touch the desired Density Base button.

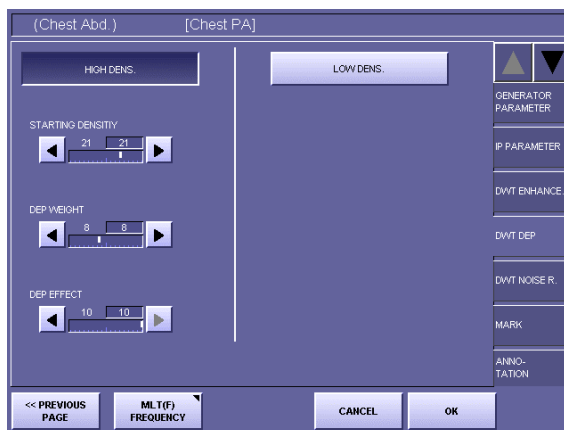
The parameter is set for the Density Base selected, and the DENSITY BASE window is closed.

2.3 Setting DWT DEP Tab

2.3.1 Setting DWT DEP for High-Density Field

1 Set the DWT DEP for the High-Density Field effective

Touch [HIGH DENS.] to display the parameters. The appearance of the button switches over between the highlight (in white outline characters against a colored background) and normal display each time you touch the button. The parameters are available when the button is highlighted.



DWT DEP Screen with Parameters of HIGH DENS.

2 Set the STARTING DENSITY parameter of the High-Density Field

Touch the ◀ or ▶ button, and set the value within the range between 0 to 30. If the parameters of the Low-Density Field are effective, this value cannot be set lower than the value of STARTING DENSITY of the Low-Density Field (→ P.12). The value on the left is the setting saved previously, and the value on the right is the current setting. The value indicates the lower limit of density to start compression as shown in the following table:

Setting Values for Starting Density of High-Density Field

Setting value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Starting density (D)	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	
Setting value	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Starting density (D)	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2

3 Set the DEP WEIGHT parameter of the High-Density Field

Touch the ◀ or ▶ button, and set the value within the range between 0 to 20. The value on the left is the setting saved previously, and the value on the right is the current setting. The value indicates the compression ratio in the density area that is larger than the value of STARTING DENSITY. Select a larger value for higher degree of compression, and select a smaller value for lower degree of compression.

4 Set the DEP EFFECT parameter of the High-Density Field

Touch the ◀ or ▶ button, and set the value within the range between 0 to 10. The value on the left is the setting saved previously, and the value on the right is the current setting.

The value indicates the intensity of restoration in high frequency component that reflects the starting density and compression ratio of the High-Density Field.

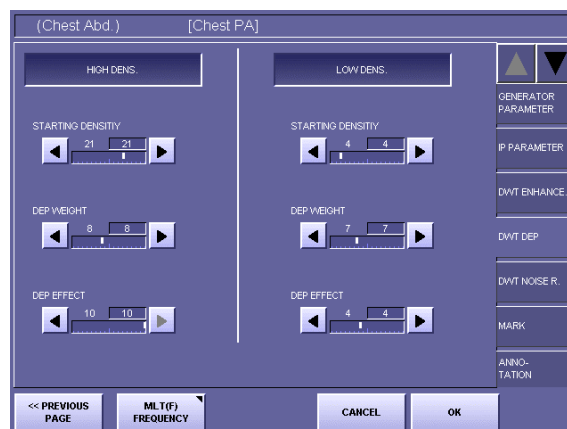
Select a larger value for higher degree of intensity, and select a smaller value for lower degree of intensity.

NOTE: If the DEP EFFECT parameter is set to an excessive value, artifacts may occur in the image, or the effective data of the exposure image may be damaged. Check the exposure image, and if the results of compression appear to be too strong, either set the parameter to a smaller value, or set the DWT DEP not effective.

2.3.2 Setting DWT DEP for Low-Density Field

1 Set the DWT DEP for the Low-Density Field effective

Touch [LOW DENS.] to display the parameters. The appearance of the button switches over between the highlight (in white outline characters against a colored background) and normal display each time you touch the button. The parameters are available when the button is displayed in highlight.



DWT DEP Screen with Parameters of HIGH and LOW DENS.

Continued on the following page >>

2 Set the STARTING DENSITY parameter of the Low-Density Field

Touch the ◀ or ▶ button, and set the value within the range between 0 to 30.
 If the parameters of the High-Density Field are effective, this value cannot be set lower than the value of STARTING DENSITY of the High-Density Field (→ P.10).
 The value on the left is the setting saved previously, and the value on the right is the current setting.
 The value indicates the upper limit of density to start compression as shown in the following table:

Setting Values for Starting Density of Low-Density Field

Setting value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Starting density (D)	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	
Setting value	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Starting density (D)	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2

3 Set the DEP WEIGHT parameters of the Low-Density Field

Touch the ◀ or ▶ button, and set the value within the range between 0 to 20.
 The value on the left is the setting saved previously, and the value on the right is the current setting.
 The value indicates the compression ratio in the density area that is smaller than the value of STARTING DENSITY.
 Select a larger value for higher degree of compression, and select a smaller value for lower degree of compression.

4 Set the DEP EFFECT parameter of the Low-Density Field

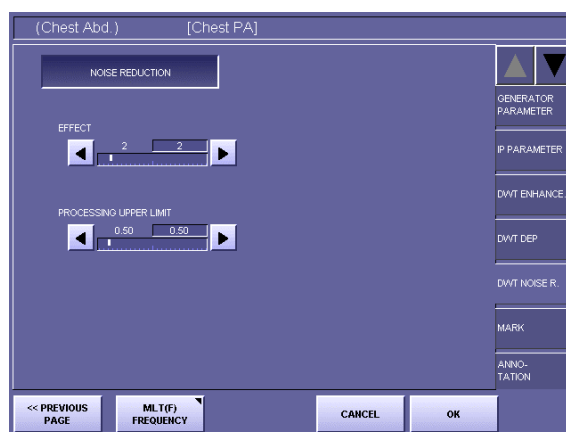
Touch the ◀ or ▶ button, and set the value within the range between 0 to 10.
 The value on the left is the setting saved previously, and the value on the right is the current setting.
 The value indicates the intensity of restoration in high frequency component that reflects the starting density and compression ratio of the Low-Density Field.
 Select a larger value for higher degree of intensity, and select a smaller value for lower degree of intensity.

NOTE: If the DEP EFFECT parameter is set to an excessive value, artifacts may occur in the image, or the effective data of the exposure image may be damaged.
 Check the exposure image, and if the results of compression appear to be too strong, either set the parameter to a smaller value, or set the DWT DEP not effective.

2.4 Setting DWT NOISE R. Tab

1 Set the DWT Noise Reduction effective

Touch [NOISE REDUCTION] to display the parameters. The appearance of the button switches over between the highlight (in white outline characters against a colored background) and normal display each time you touch the button. The parameters are available when the button is displayed in highlight.



DWT NOISE R. Screen with Parameters

2 Set the EFFECT parameter

Touch the ◀ or ▶ button, and set the value within the range between 1 to 10. The value on the left is the setting saved previously, and the value on the right is the current setting. Select a larger value for higher degree of noise reduction, and select a smaller value for lower degree of noise reduction.

NOTE: If the EFFECT parameter is set to an excessive value, artifacts may occur in the image, or the effective data of the exposure image may be damaged. Check the output of exposure image, and if the results of noise reduction appear to be too strong, either set the parameter to a smaller value, or set the DWT Noise Reduction not effective.

3 Set the PROCESSING UPPER LIMIT parameter

Touch the ◀ or ▶ button, and set the value within the range between 0.2 to 3.2. The value on the left is the setting saved previously, and the value on the right is the current setting. The value indicates the upper limit of density to reduce the noises.

3. QA Mode Settings

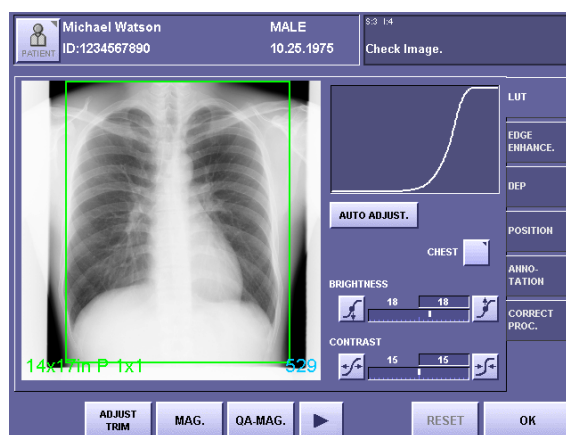
The examples used in this chapter are the screens of CXDI System Software version 6.3.

3.1 Procedures to Change Parameters

Image processing of the exposure images with CXDI is called QA (Quality Assurance) Processing, and can be performed by adjusting the parameters on the QA Mode screen to optimize the exposure image.

1 Display the QA Mode screen

Display the QA Mode screen by one of the following methods:



QA Mode Screen

To display the QA Mode screen automatically right after x-ray exposure

On the Exposure screen, touch the followings to display the DISPLAYING PARAMETER CHANGE/QA SCREEN DURING EXPOSURE screen:

[SYSTEM] > [SETUP MENU] > [SYSTEM SETUP] > [DISPLAYING PARAMETER CHANGE/QA SCREEN DURING EXPOSURE]

Then set the QA Mode screen effective

To perform QA Processing right after x-ray exposure

Touch [QA] on the Preview screen.

To perform QA Processing after examination

Select the exposure image from the Study List, and display the selected image, then touch [QA].

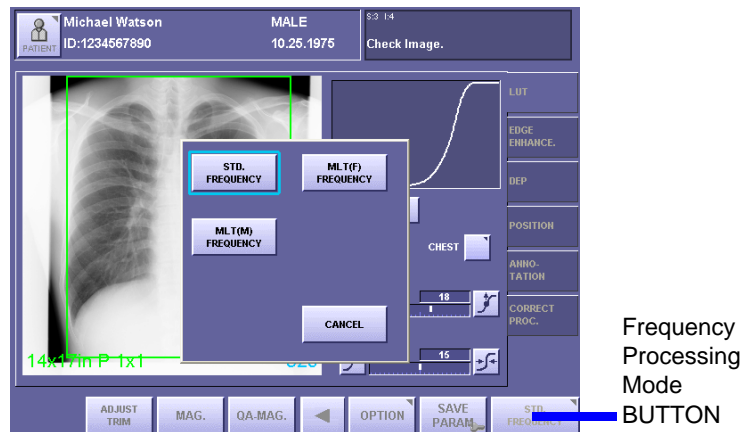


Availability of Frequency Processing Mode

If your CXDI System Software is the version 5.0 or before, there is no need to select the frequency processing mode as described in the next step (step 2). Skip the step 2 and proceed to the step 3.

2 Select MLT (F) FREQUENCY


If MLT (F) FREQUENCY is not currently selected (in this case, the DWT ENHANCE., DWT DEP, and DWT NOISE R. tabs are not displayed), touch the Frequency Processing Mode button to open the window, then touch [MLT (F) FREQUENCY].

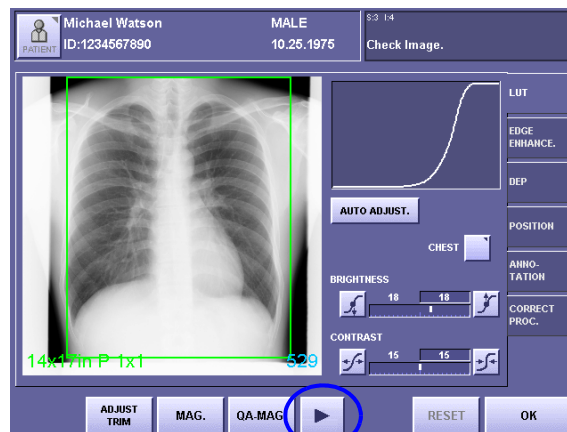


Frequency Processing Mode Window



When the Frequency Processing Mode button is not visible

If the Frequency Processing Mode button is not displayed on the screen, touch the  button at the bottom part of the screen (CXDI System Software Version 5.1 or later only).



3 Select the tab

Touch the desired tab from among three tabs: DWT ENHANCE., DWT DEP, DWT NOISE R.

4 Change the parameters

Set the parameters provided with the selected tab, referring to the corresponding descriptions; 3.2 Changing DWT ENHANCE. Tab (→ P.17), 3.3 Changing DWT DEP Tab (→ P.22), 3.4 Changing DWT Noise R. Tab (→ P.26).

Continued on the following page >>

5 Save the new parameters

To save new parameters as the default values of the Exposure Mode (except opening from Study List), touch [SAVE PARAM]. The window displaying the following message appears:

Are you sure you want to change the default generator parameters?

Then, touch [YES].



When Password is required

If the password is specified, a different message is displayed as follows: Administrator's authority is needed. Enter system password.

In this case, touch within the frame to display On-Screen-KeyBoard, and type your password, then touch [OK].

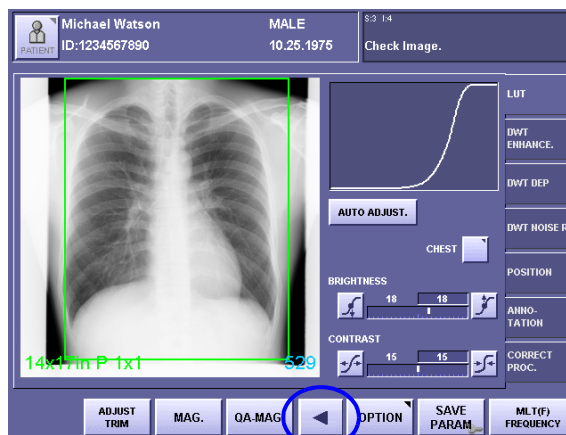
6 Close the QA Mode screen

Touch [OK].



When [OK] is not visible on the screen

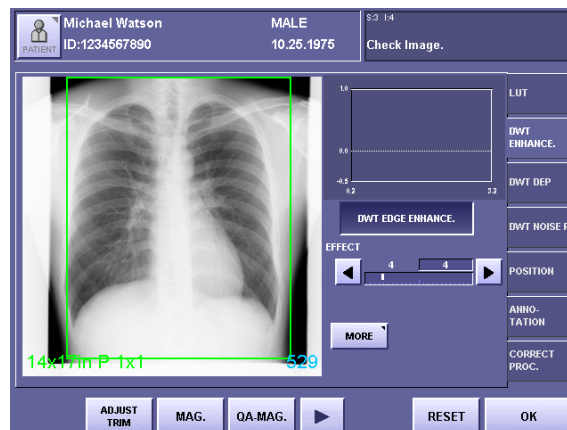
If [OK] is not displayed on the screen, touch the ◀ button at the bottom part of the screen (CXDI System Software Version 5.1 or later only).



3.2 Changing DWT ENHANCE. Tab

1 Set the DWT Edge Enhancement effective

Touch [DWT EDGE ENHANCE.] to display the parameters. The appearance of the button switches over between the highlight (in white outline characters against a colored background) and normal display each time you touch the button. The parameters are available when the button is displayed in highlight.



DWT ENHANCE. Screen with Parameters

2 Set the EFFECT parameter

Touch the ◀ or ▶ button, and set the value within the range between 1 to 20. The value on the left is the setting saved previously, and the value on the right is the current setting.

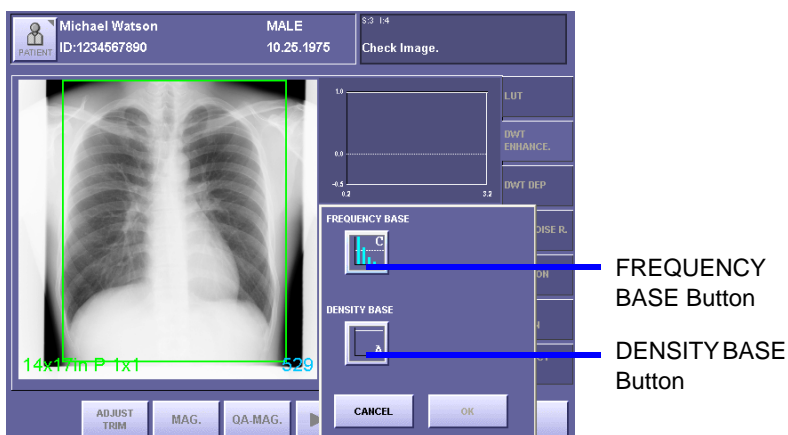
For details of the EFFECT parameter, refer to the step 2 in 2.2 Setting DWT ENHANCE. Tab (→ P.7).

NOTE: If the EFFECT parameter is set to an excessive value, artifacts may occur in the image, or the effective data of the exposure image may be damaged. Check the output of exposure image, and if the results of enhancement appear to be too strong, either set the parameter to a smaller value, or set the DWT Edge Enhancement not effective.

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3 Display the MORE window

Touch [MORE] to open the window.

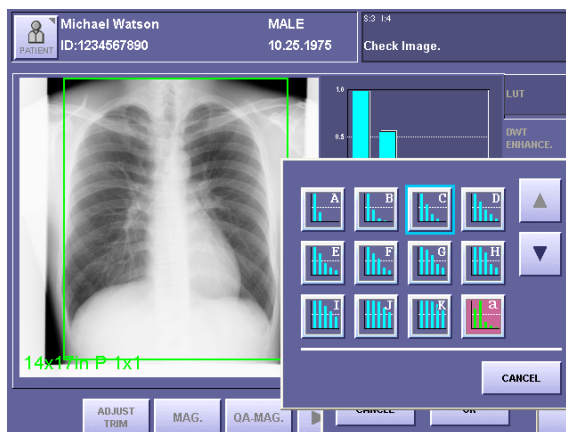


MORE Window

4 Display the FREQUENCY BASE window

Touch the FREQUENCY BASE button to open the window.

For details of the FREQUENCY BASE parameter, refer to the step 3 in 2.2 Setting DWT ENHANCE. Tab (→ P.8).



FREQUENCY BASE Window

5 Select the FREQUENCY BASE parameter

Touch the desired Frequency Base button.

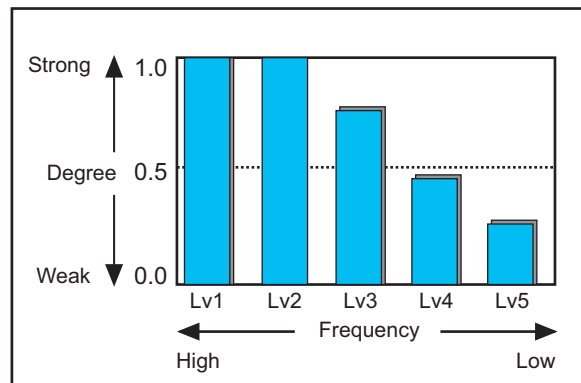
The parameter is selected for the Frequency Base, and the FREQUENCY BASE window is closed.

Touch the ▲ or ▼ button to display the buttons that are not currently visible.



Representation of the enhancement degree on a bar graph

After the Frequency Base is set, a bar graph is displayed at the top-right of the screen to illustrate the comparisons with the frequency bands and degree of enhancement. The horizontal axis labeled with Lv represents the frequency band, indicating the lower frequency with a larger value. The vertical axis represents the degree of enhancement, indicating the stronger degree of enhancement with a larger value.

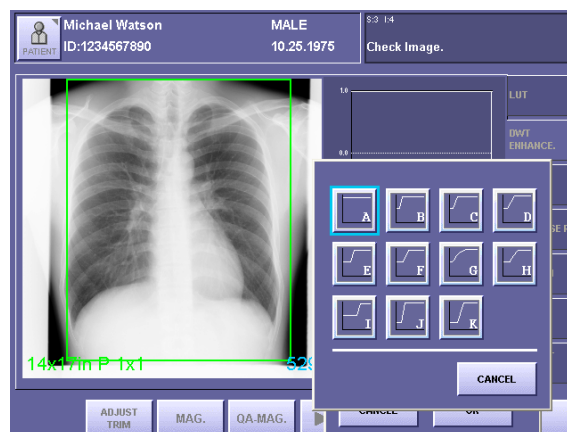


Bar Graph of Enhancement (Frequency Base)

6 Display the DENSITY BASE window

Touch the DENSITY BASE button to open the window.

For details of the DENSITY BASE parameter, refer to the step 5 in 2.2 Setting DWT ENHANCE. Tab (→ P.9).



DENSITY BASE Window

Continued on the following page >>

7 Select the DENSITY BASE parameter

Touch the desired Density Base button.

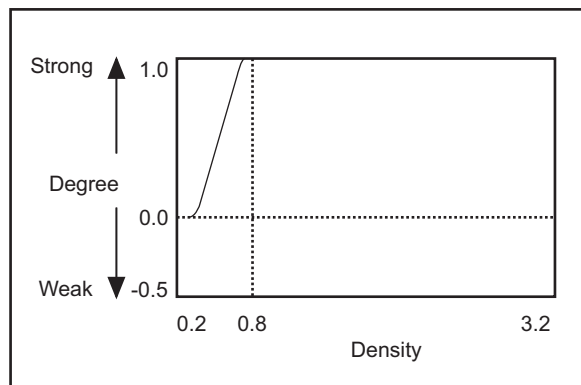
The parameter is selected for the Density Base, and the DENSITY BASE window is closed.



Representation of the enhancement degree on a line graph

After the Density Base is set, a line graph is displayed at the top-right of the screen to illustrate the comparisons with density and the degree of enhancement.

The horizontal axis represents density, and the vertical axis represents the degree of enhancement in each density, indicating the stronger degree of enhancement with a larger value.



Line Graph of Enhancement (Density Base)

8 Set the settings valid, and close the MORE window

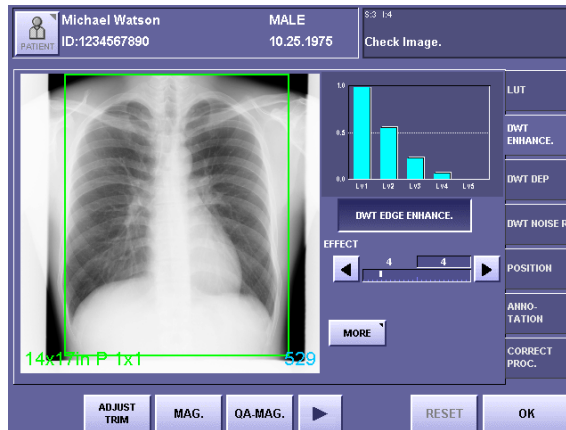
Touch [OK].



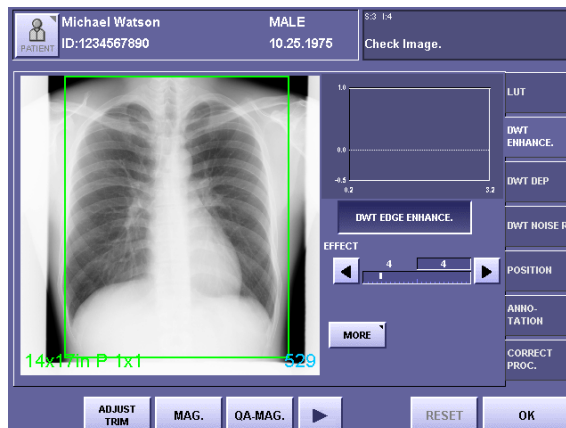
Switching the display of the graph

Touch the graph area to switch over the Frequency Base Graph (bar graph) and Density Base graph (line graph).

Actual processing shall not be performed unless the DWT Edge Enhancement is effective, although the graph is displayed on the screen.



Frequency Base Graph (Bar Graph)



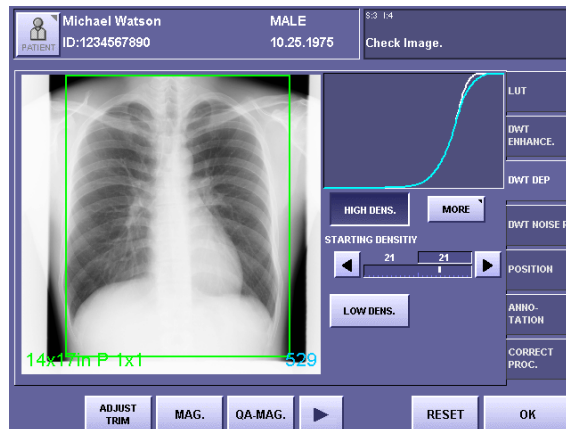
Density Base Graph (Line Graph)

3.3 Changing DWT DEP Tab

3.3.1 Changing DWT DEP for High-Density Field

1 Set the DWT DEP for the High-Density Field effective

Touch [HIGH DENS.] to display the parameters. The appearance of the button switches over between the highlight (in white outline characters against a colored background) and normal display each time you touch the button. The parameters are available when the button is displayed in highlight.



DWT DEP Screen with Parameters of HIGH DENS.



Representation of DWT DEP on a graph

A blue curve is always displayed on a graph, and when HIGH-DENS. or LOW-DENS. is effective, a white curve is added.

The blue curve represents the tone curve selected on the LUT tab, and the white curve represents the tone curve combining the blue and the DWT DEP tone curves.

In other words, when either of HIGH-DENS. or LOW-DENS. is effective, the original tone curve compensation and the DWT DEP tone curve compensation are performed at the same time.

2 Set the STARTING DENSITY parameter of the High-Density Field

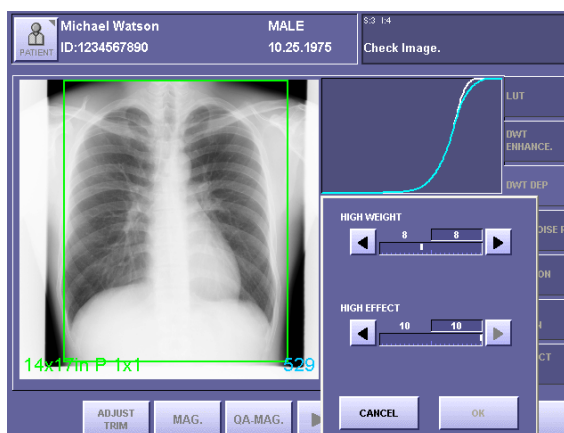
Touch the ◀ or ▶ button, and set the value within the range between 0 to 30.

The value on the left is the setting saved previously, and the value on the right is the current setting.

For details of the parameter, refer to the step 2 in 2.3.1 Setting DWT DEP for High-Density Field (→ P.10).

3 Display the MORE window

Touch [MORE] to open the window.



MORE Window

4 Set the HIGH WEIGHT parameter

Touch the ◀ or ▶ button, and set the value within the range between 0 to 20. The value on the left is the setting saved previously, and the value on the right is the current setting.

For details of the parameter, refer to the step 3 in 2.3.1 Setting DWT DEP for High-Density Field (→ P.10).

5 Set the HIGH EFFECT parameter

Touch the ◀ or ▶ button, and set the value within the range between 0 to 10. The value on the left is the setting saved previously, and the value on the right is the current setting.

For details of the parameter, refer to the step 4 in 2.3.1 Setting DWT DEP for High-Density Field (→ P.11).

NOTE: If the HIGH EFFECT parameter is set to an excessive value, artifacts may occur, and the effective data of the exposure image may be damaged. Check the exposure image, and if the results of compression appear to be too strong, either set the parameter to a smaller value, or set the DWT DEP not effective.

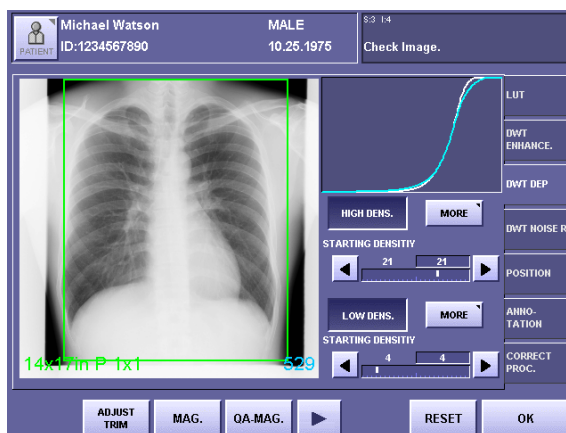
6 Set the settings valid, and close the MORE window

Touch [OK].

3.3.2 Changing DWT DEP for Low-Density Field

1 Set the DWT DEP for the Low-Density Field effective

Touch [LOW DENS.] to display the parameters. The appearance of the button switches over between the highlight (in white outline characters against a colored background) and normal display each time you touch the button. The parameters are available when the button is displayed in highlight.



DWT DEP Screen with Parameters of HIGH and LOW DENS.

MEMO **Representation of DWT DEP on a graph**

A blue curve is always displayed on the graph, and when HIGH-DENS. or LOW-DENS. is effective, a white curve is added.

The blue curve represents the tone curve selected on the LUT tab, and the white curve represents the tone curve combining the blue and the DWT DEP tone curves.

In other words, when either of HIGH-DENS. or LOW-DENS. is effective, the original tone curve compensation and the DWT DEP tone curve compensation are performed at the same time.

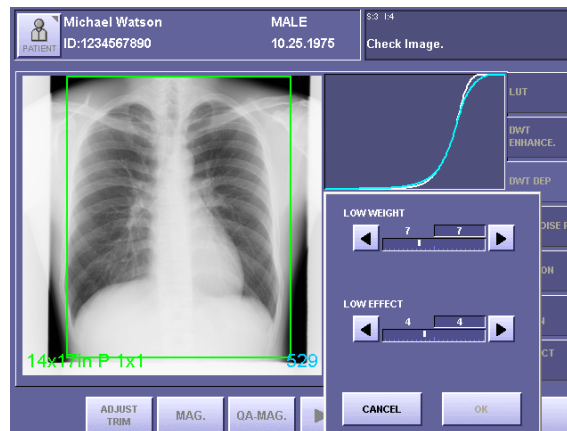
2 Set the STARTING DENSITY parameter of the Low-Density Field

Touch the ◀ or ▶ button, and set the value within the range between 0 to 30 range. The value on the left is the setting saved previously, and the value on the right is the current setting.

For details of the parameter, refer to the step 2 in 2.3.2 Setting DWT DEP for Low-Density Field (→ P.12).

3 Display the MORE window

Touch [MORE] to open the window.



MORE Window

4 Set the LOW WEIGHT parameter

Touch the ◀ or ▶ button, and set the value within the range between 0 to 20.

The value on the left is the setting saved previously, and the value on the right is the current setting.

For details of the parameter, refer to the step 3 in 2.3.2 Setting DWT DEP for Low-Density Field (→ P.12) .

5 Set the LOW EFFECT parameter

Touch the ◀ or ▶ button, and set the value within the range between 0 to 10.

The value on the left is the setting saved previously, and the value on the right is the current setting.

For details of the parameter, refer to the step 4 in 2.3.2 Setting DWT DEP for Low-Density Field (→ P.12) .

NOTE: If the LOW EFFECT parameter is set to an excessive value, artifacts may occur, and the effective data of the exposure image may be damaged. Check the exposure image, and if the results of compression appear to be too strong, either set the parameter to a smaller value, or set the DWT DEP not effective.

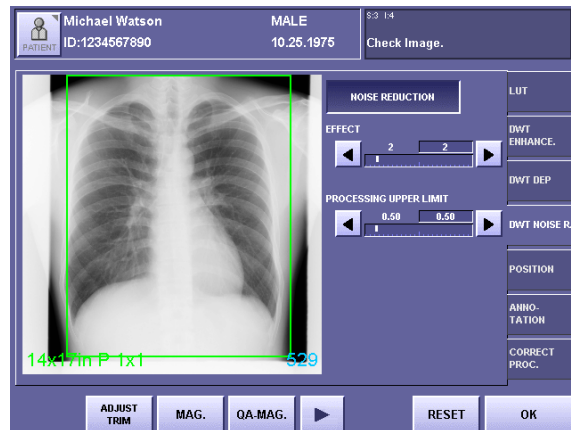
6 Set the settings valid, and close the MORE window

Touch [OK].

3.4 Changing DWT Noise R. Tab

1 Set the DWT Noise Reduction effective

Touch [NOISE REDUCTION] to display the parameters. The appearance of the button switches over between the highlight (in white outline characters against a colored background) and normal display each time you touch the button. The parameters are available when the button is displayed in highlight.



DWT NOISE R. Screen with Parameters

2 Set the EFFECT parameter

Touch the ◀ or ▶ button, and set the value within the range between 1 to 10. The value on the left is the setting saved previously, and the value on the right is the current setting. For details of the parameter, refer to the step 2 in 2.4 Setting DWT NOISE R. Tab (→ P.13).

NOTE: If the EFFECT parameter is set to an excessive value, artifacts may occur, and the effective data of the exposure image may be damaged. Check the output of exposure image, and if the results of noise reduction appear to be too strong, either set the parameter to a smaller value, or set the DWT Noise Reduction not effective.

3 Set the PROCESSING UPPER LIMIT parameter

Touch the ◀ or ▶ button, and set the value within the range between 0.2 to 3.2. The value on the left is the setting saved previously, and the value on the right is the current setting. For details of the parameter, refer to the step 3 in 2.4 Setting DWT NOISE R. Tab (→ P.13).

4. QA Parameters

When MLT(F) frequency processing is selected, the QA parameters (%IP_PARAM%) in Annotation are displayed in the format below.

REX680	Q1	E5dA	D25,10,10,10,10,10	N5,5	GCS16,10	R	RT+90	Z0	C0	M2,1,2
1	2	3	4	5	6	7	8	9	10	11

n stands for the numeric value, character or symbol displayed on Annotation.

1 REX

The parameter is displayed as follows:

REXn

If LUT is set to REX ADJUST for x-ray exposure, **F-REX** is displayed.

2 Frequency Processing Mode

If MLT (F) FREQUENCY is selected as the Frequency Processing Mode, **Q1** is displayed. **Q0** is displayed for STD. FREQUENCY, and **Q2** displayed for MLT (M) FREQUENCY. For other QA parameters displayed when the mode other than MLT (F) Frequency Processing is selected, please refer to the respective manuals.

3 DWT Edge Enhancement

The parameters are displayed as follows:

En (EFFECT) **n** (FREQUENCY BASE, represented with the alphabet on the button) **n** (DENSITY BASE, represented with the alphabet on the button)

If the DWT Edge Enhancement is not effective, nothing is displayed.

The display values correspond to the actual values as shown in the following table:

Effect	
Display Value	1.....20
Effect	Low.....High

4 DWT DEP

The parameters are displayed as follows:

Dn (STARTING DENSITY of High-Density Field), **n** (DEP WEIGHT of High-Density Field), **n** (DEP EFFECT of High-Density Field), **n** (STARTING DENSITY of Low-Density Field), **n** (DEP WEIGHT of Low-Density Field), **n** (DEP EFFECT of Low-Density Field)

If the DWT DEP is not effective, nothing is displayed.

If only the High-Density Field is not effective, * is displayed instead of the parameters (D*, 10, 10, 10), and if only the Low-Density Field is not effective, * is displayed instead of the parameters (D25, 10, 10, *).

The display values correspond to the actual values as shown in the following tables (the values for DEP EFFECT are omitted):

Continued on the following page >>

STARING DENSITY (High-Density and Low-Density Fields)

Display Value	0	1	2	3	4	5	6	7	8	9	
Density	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	
Display Value	10	11	12	13	14	15	16	17	18	19	
Density	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	
Display Value	20	21	22	23	24	25	26	27	28	29	30
Density	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2

DEP WEIGHT (High-Density and Low-Density Fields)

Display Value	0	1	2	3	4	5	6	7	8	9	
Degree	1.00	0.95	0.90	0.85	0.80	0.75	0.70	0.65	0.60	0.55	
Display Value	10	11	12	13	14	15	16	17	18	19	20
Degree	0.50	0.45	0.40	0.35	0.30	0.25	0.20	0.15	0.10	0.05	0.00

5 DWT Noise Reduction

The parameters are displayed as follows:

Nn (EFFECT), **n** (PROCESSING UPPER LIMIT)

If the DWT Noise Reduction is not effective, nothing is displayed.

6 LUT Parameters

The parameters are displayed as follows:

Gn (CURVE SHAPE) **n** (BRIGHTNESS), **n** (CONTRAST)

The Curve Shapes are represented by the following symbols respectively:

CS: CHEST, **SS**: STAN. CONTRAST, **LI**: LINEAR, **IL**: INV. LINEAR,
BS: BONE #1, **GS**: BONE #2

The display values correspond to the actual values as shown in the following table (the values for CONTRAST are omitted):

BRIGHTNESS

Display Value	1	2	3	4	5	6	7	8	9	10
Density	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2
Display Value	11	12	13	14	15	16	17	18	19	20
Density	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2
Display Value	21	22	23	24	25	26	27	28	29	
Density	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	

7 Flip

Either or both of the following parameters is/are displayed:

R (Flip Horizontal), **U** (Flip Vertical)

If image is not flipped, nothing is displayed.

8 Rotate

The parameter is displayed as follows:

RTn (Rotate Angle)

The degree of rotation is available from **+90**, **-90**, **+180**.

If image is not rotated, nothing is displayed.

9 Suppress Grid Processing

One of the following parameters is displayed:

Z0 (No grid stripe is detected), **Z1** (Grid stripes are suppressed), **Z*** (Processing is not determined yet)

If the Grid Reduction Processing is not effective, nothing is displayed.

10 High-Density Clipping Processing (HIGH IN. CLIPPING)

One of the following parameters is displayed:

C0 (Clipping is not performed), **C1** (Clipping is performed), **C*** (Processing is not determined yet)

If the High-Density Clipping Processing is not effective, nothing is displayed.

11 Dose-Depend Processing (D. DEPEND MTF IMP)

One of the following parameters is displayed:

M0 (Processing is not performed), **M1** (Processing is performed in the fix mode),

M2,n,n (Processing is performed in the dose dependent mode)

The parameters for **M2** are displayed as follows:

M2, n (FILTER TYPE Index), **n** (INTENSITY Index)

The display values correspond to the parts of the body as shown in the following table (the values for INTENSITY are omitted):

FILTER TYPE

Display Value	1	2	3	4	5	6	7
Body Part	Chest	Abdo- men	Skull	Cervical vertebrae	Thoracic vertebra	Lumbar	Limbs

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